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GEOGRAPHIC SCHOOL BULLETINS

Published Weekly by

THE NATIONAL GEOGRAPHIC SOCIETY

(The National Geographic Society is a scientific and educational Society, wholly altruistic, incorporated as a non-commercial institution for the increase of geographic knowledge and its popular diffusion. General Headquarters, Washington, D. C.)

March 20, 1944. Vol. XXII. No. 35.

1. Admiralty Islands: Northern Sentinels for New Guinea
2. Where Are the Yanks? 5. North Africa
3. Burma's Ledo Road a New Life Line for China
4. Recent Coal Discoveries Add to Chile's Mineral Wealth
5. Geo-Graphic Brevities: Pskov—Water Buffalo

THE MARY'S LITTLE LAMB OF NORTH AFRICA MAY BE A BLACK GOAT

And everywhere that the goat goes, "Mary" is sure to follow. For the nomadic shepherd folk who inhabit North Africa's semi-desert fringes follow their flocks and migrate with the seasons. Many of the nomads, with fair skin and blue eyes, are of Berber blood, descendants of a strange white race resident there since Pharaohs ruled Egypt. Berber women refuse the Moslem veil.

Nomadic tent-wives lead busy lives, weaving cloth of wool and tanning leather supplied by the flocks. This engaging young shepherdess aids in family chores by caring for her pet black kid. Her family can afford to adorn her with a bracelet and silver earrings. Though her shawl may be home-woven, her dress is of an imported print. She was photographed at Gabès in southeast Tunisia, one of the foreign fronts where Americans fought (Bulletin No. 2).

Branson De Cou

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HOW TEACHERS MAY OBTAIN THE BULLETINS

The Geographic School Bulletins are published weekly throughout the school year (thirty issues) and will be mailed to teachers in the United States and its possessions for one year upon receipt of 25 cents (stamps or money order); in Canada, 50 cents. Originally entered as second-class matter January 27, 1922; re-entered as of April 27, 1943, Post Office, Washington, D. C., under Act of March 3, 1879. **Copyright, 1944, by National Geographic Society, Washington, D. C. International copyright secured. All rights reserved. Quedan reservados todos los derechos.**

Admiralty Islands: Northern Sentinels for New Guinea

AMERICAN forces fighting their way into the Admiralty Islands are closing a chapter of the war in the South Pacific. They are driving the Japs out of the last fringes of Melanesia, that vast collection of islands off Australia wedged between Polynesia on the east and Micronesia on the north. The Admiralties, just south of the Equator, are the northernmost group of Melanesian islands. Across the Equator dividing line lie the Caroline Islands, mandated to Japan.

The Admiralty group consists of one large island, Manus, surrounded by a halo of several dozen smaller islands. Rambutyo, the group's second-largest member, rises to heights of 700 feet near the center of its ten-mile length. Lou, Baluan, and Mbuke are also substantial tracts of land with hills and cliffy coasts. The other islands are low and sandy coral atolls. In 1939 there were 13,712 natives living in the group, and 75 non-natives.

Waterspouts and Reefs Threaten Shipping

Storms that swirl over the islands create occasional waterspouts, those seagoing counterparts of tornados which erect revolving columns of water between sea surface and storm cloud. The Admiralties are not completely charted; ships must keep a constant lookout for unexpected reefs. Some areas should be entered only when the sun is in a position to reveal the underwater hazards without glare.

Manus Island, about 600 square miles in area, is by far the largest and most populous of the group. Together all the other islands total only 200 square miles.

Manus has the best harbors, the only towns, and most of the 24,000 acres of coconut plantations of the Admiralties. It is a rugged, jungle-blanketed island of volcanic origin, with peaks rising 3,000 feet above sea level. White men penetrated the interior for the first time in 1927, when an Australian patrol crossed it. Japanese seized the island in April, 1942.

The chief town and the administrative center for the group is Lorengau, with 100 residents, on Manus' northeast tip. This was the site of the only post office, radio station, bank, and store in the Admiralties. The off-lying island of Los Negros protects Lorengau's harbor. It was Los Negros, site of a Jap airfield, which felt the spearhead of American attack.

"Salt-Water Boys" Dive for Sea Worms

Aside from the traders and officials at Lorengau, Manus is inhabited by Melanesians akin to the Papuans of New Guinea. The coastal natives, the Manus people or "salt-water boys," live in villages built on stilts above the water. They develop remarkable skill in handling their canoes.

They live chiefly by fishing, collecting the trepang or sea worm, and diving for pearl shell. The trepang is a harmless salt-water worm, sometimes two and a half feet long, that lives on the sea bottom in shallows not more than 15 or 20 feet deep. Native fishermen dive from their canoes and scrape up the wriggling lengths of beige, pink, red, or black worms. Later the creatures are boiled in salt water, smoked over a slow fire, and sun-dried for days. In peacetime, quantities of Admiralties trepang are exported to China.

It was as poachers in the valuable pearl and shell fisheries that the Japanese first got into the Admiralties. This infiltration, during the 1930's, ruined the fisheries and gave the Japs firsthand information for their invasion.

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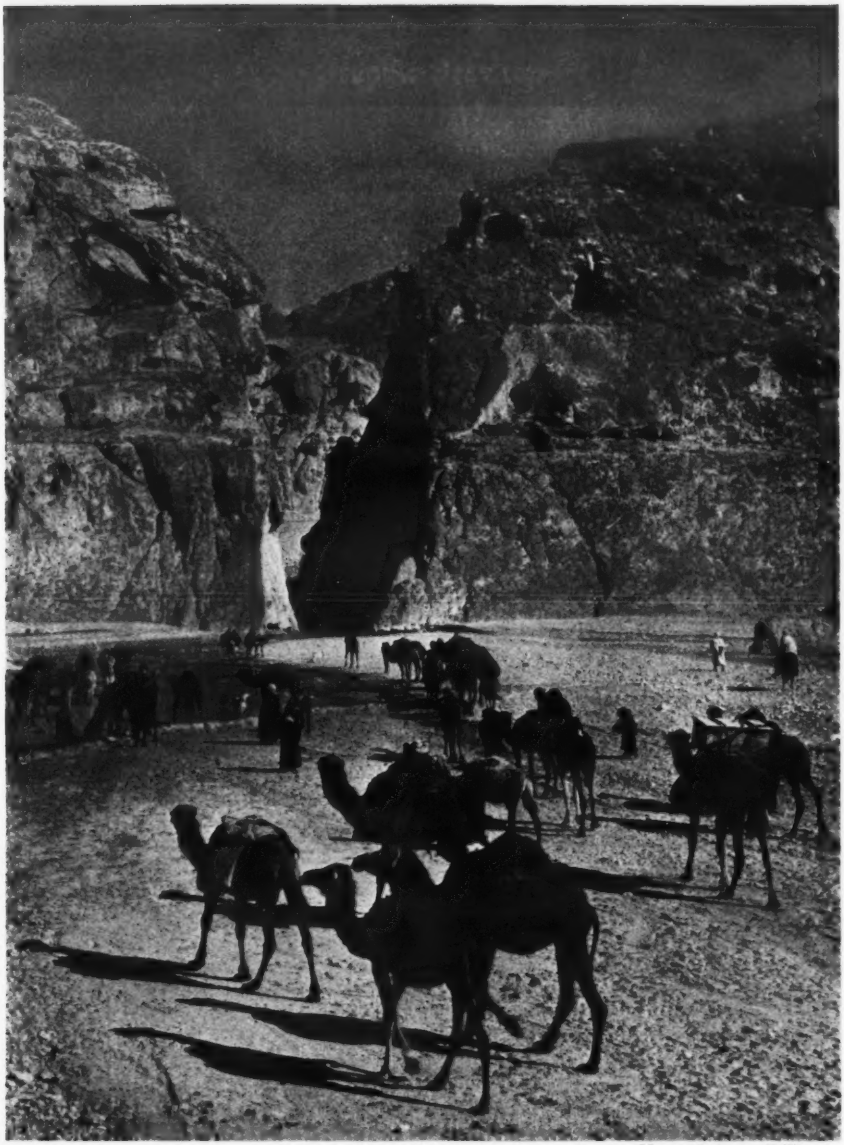

Maynard Owen Williams

NORTH AFRICAN BATTLES SHOWED YANKS TUNISIA'S LITTLE GRAND CANYON

Such battlefields as El Guettar and Gafsa brought American soldiers within visiting distance of southwestern Tunisia's Seldja Gorges. The Seldja River, spasmodically swollen by rains, has carved its deep and narrow channel through successive low eastern spurs of the Atlas Mountains. After rains the gorges are filled with the river torrent; later the river shrinks to a shallow stream (left), and caravans thread through on their route between the desert and Tunisia's rich coastal plain. The Sfax-Metlaoui railway uses sections of the gorges beyond to reach Tunisian phosphate quarries. This clear-cut, cliff-walled cleft puzzled the ancients; they said it was slashed through the mountains by the sword of Hercules (Bulletin No. 2).

GEOGRAPHIC SCHOOL BULLETIN

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General Headquarters, Washington, D. C.

Where Are the Yanks? 5. North Africa

(*This is the fifth in a series of articles about the regions where American service men and women are stationed.*)

YANKS who landed in North Africa on November 8, 1942, may have had their eyes wide open for platter-lipped women, giant apes, elephants, tropical jungle. But instead they found French cities, Roman ruins, veiled Moslem women, olive groves, and railroads. On every hand they saw landmarks which show that North Africa's destiny has been shared through the ages with Europe to the north and Arab Asia to the east, rather than with the Dark Continent of Stanley and Livingstone south of the broad Sahara.

The North Africa known to today's A.E.F. includes Morocco, Algeria, and Tunisia (map, next page). Its Mediterranean shores get the name of the Barbary Coast from the Berbers—light-skinned, blue-eyed aborigines whose strain has persisted through the centuries in spite of successive occupations by Phoenicians, Greeks, Romans, Arabs, and French. Hardy and democratic, they farm the Atlas hillsides and lead their flocks over semi-desert pastures (illustration, cover), leaving city life for the Arabs, the Jews, and the European colonists and traders.

A Region of Grain Fields and Groves

Bordering the Mediterranean from its Gibraltar gate to Tunisia's Cape Bon, backed by the Atlas coastal range, is the Tell, a well-watered, fertile region about 50 miles wide. This northernmost strip of North Africa has the finest grain fields, the most flourishing vineyards, the most productive olive and citrus groves. Algiers, Oran, Tunis, and Bizerte are the largest cities of this region.

To the Barbary Coast, in 1804 and on several later occasions up to 1815, came Commodore Stephen Decatur of the young U. S. Navy to teach piratical Moors that his country really meant "not one cent for tribute."

To get a perspective on today's picture of the Barbary melting pot, look back to the 7th century when Arabs from the east began their sweep into the region. Mingling with the Berbers, they produced the culture of the Moors. Under an Arab leader the Moors conquered Spain and developed a strong civilization in a weak world. It was the Spaniards who first called these mixed peoples "Moors," from Mauretania, the Roman province which the Arabs had conquered. Declining in power, the Moors were driven from Spain in 1492. As Barbary corsairs they ruled the Mediterranean until Decatur's lead encouraged colony-minded France to add most of Barbary to her African empire.

Now stroll with an American soldier on a market day through the old Moorish quarter of Morocco's port of Rabat. There one will see western Barbary types —Arabs robed in flowing burnooses, Berbers in sheepskins and sacking, Jews in black gaberdines and skull caps.

Berber Farm Life a Struggle Against Drought

There will be women, veiled in the Moslem tradition. Only eyes are revealed, made limpid and enticing by hours of care. But the rule book says Yanks may not gaze long upon them.

The climate is mild, the latitude that of the southern United States. Cattle graze on lower slopes of Atlas ridges that reach to 12,000 feet. Fruits and grains thrive where moisture is sufficient. Livestock is stunted and wiry. The Berber

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The skillful Manus fishermen contemptuously call the tribes of the interior the Usiai. With these the Manus folk trade their sea spoils for agricultural products. This exchange works out neatly in the matter of betel nuts, which are a favorite "chew." The inland people grow the nuts, while salt-water boys produce the coral lime with which the betel is always chewed.

The people of the smaller islands are the Matankor. The three tribes speak different dialects of Papuan and cannot understand one another. With the Matankors of Rambutyo the other natives barter for obsidian—black volcanic glass—which is made into spear points and knife blades.

The Admiralty Islands mark the end of a hook which New Britain and the Bismarck Archipelago form north of New Guinea. The nearest point on the New Guinea coast is about 200 miles southwest of Manus. Rabaul, on New Britain, is 380 miles southeast. Guam is 1,100 miles due north on a direct line to Tokyo.

The Admiralty cluster was discovered in 1616 by the Dutch navigator Schouten. For a century and a half no other European ventured into this reef-snarled region. In 1767 Philip Carteret sailed past. The first actual landing was made in 1875 from the British ship *Challenger*. Ten years later the islands were engulfed in Germany's expansion in the Pacific. When the Australians found themselves at war with Germany in 1914, they occupied the Admiralties, which were turned over to Australia in 1919 as part of the Mandated Territory of New Guinea.

Note: The Admiralty Islands are shown in a large-scale inset of the Bismarck Archipelago on the National Geographic Society's Map of the Pacific Ocean. A price list of maps may be obtained from the Society's headquarters in Washington, D. C.

Bulletin No. 1, March 20, 1944.

Dr. J. Jeswiet

SAGO ROOTS FORM NATURAL BARBED-WIRE BARRICADES IN THE ADMIRALTIES

In swampy areas in New Guinea and the Admiralty Islands the sago palms surround themselves with natural barricades of multiple aerial roots, studded with tufts of thorns. The palm is a source of food starches, which the people collect to supplement their diet of taro, yams, sugar cane, breadfruit, and bananas. Chopping their way through the tangle of thorny roots, they cut down the sago palm, split open the trunk, and extract the pith. By pounding the pith and forcing it through a sieve they separate the starch from the woody fiber. Sago starch, or flour, is made into a form of bread or into mush, flavored often with bananas or coconut, and eaten with fish.

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Burma's Ledo Road a New Life Line for China

WHERE there's a will there's a highway.

The partially completed Ledo Road in northeast India and northernmost Burma is an example. The road was needed primarily for the supply of Allied forces campaigning against the Japs in northern Burma. So there it is.

A second purpose which the road was designed to serve at some future date is to link the highways of China's Yunnan Province with the railroad systems of Burma and India. But between the eastward-pushing head of the completed road and Chinese highways lie Himalayan ranges three miles high, gorges of Asia's mightiest rivers, and Japanese troops.

Construction of the Ledo road, which was planned late in 1941 and begun in 1942, has been under the supervision of U. S. Army Engineers.

High Passes Lead to Burma

The name of the road is that of a town in Assam, India's mountainous eastern province, where the road starts. Ledo is at the end of a spur from the Chittagong-Sadiya railway, the main line between the Bay of Bengal and the valley of the upper Brahmaputra River.

From railhead at Ledo the new road pushes eastward over the boundary Patkai Range into northern Burma and winds down into the basin of the upper Chindwin River. Its first completed section is about 115 miles long.

Engineers had a choice of passes through the Patkai Mountains—all difficult. The Chaukan Pass, at an elevation of 7,980 feet, leads to Fort Hertz (Putao), Burma's northernmost post office. The more remote Diphuk Pass, at 14,280 feet, opens beyond the headwaters of the Mali Hka, a tributary of the Irrawaddy River.

Fort Hertz is less than 100 air miles from the wild western frontier of China, less than 200 air miles from Paoshan, where the old Burma Road from Lashio winds through west China. But these distances are vastly increased by vertical miles up mountains and down into river gorges.

Difficulties of building the road have been out of all proportion to its length. In the monsoon season 50 inches of rain may fall in a single month, as much as 7 inches in one day. Washouts are frequent, sometimes costing a quarter-mile of surface. Mud is a seasonal torment. Hardwood jungles are thick and tangled (illustration, next page), wear bouquets of pink and yellow Burma orchids, and resist ax and bulldozer. Malaria, dysentery, and leeches took a high toll of workers.

The road zigzags to make easy grades over the flanks of mountains two and three miles high. It takes advantage of old silk and tea trails. It shrinks to a one-way jeep track where it spirals around precipices.

Work of Many Races

Building is credited to an international army of workers. American and Chinese engineering units were aided by gangs of native laborers—Nepalese subjects of the Maharajah of Nepal, hillmen from upper Bengal, warlike Kachins, and tribesmen from Assam's Naga Hills.

To build one mile of road the engineers moved, on the average, three-quarters of a million tons of rock and earth, laid a thousand feet of culvert.

Modern machinery eased the difficulty and, in effect, multiplied the manpower

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farmers grow hardy in the struggle to live through recurrent droughts.

Casablanca is a modern city, the first built by the French in North Africa. With a population of more than 257,000, it is the largest city of the region. More than one-quarter of its inhabitants are Europeans.

From Casablanca a railroad runs eastward to Fez, to Tlemcen—center of France's military rule in North Africa—and on to Oran, Algiers, and Tunis. The railroad tapers to narrow gauge and ends at the oasis town of Gabès. This is the desert's edge. West are the seasonal salt lakes called *chotts* and Tunisia's phosphate wealth. A good highway parallels the railroad from Casablanca to Tunis, then follows the coast to Tripoli.

At Oran, Americans cleared the scuttled French ships from the harbor entrance and landed 2,000,000 tons of war supplies in 1943. Old Spanish forts and a Moorish castle adorn the mountain backdrop of this busy city of 200,000 people.

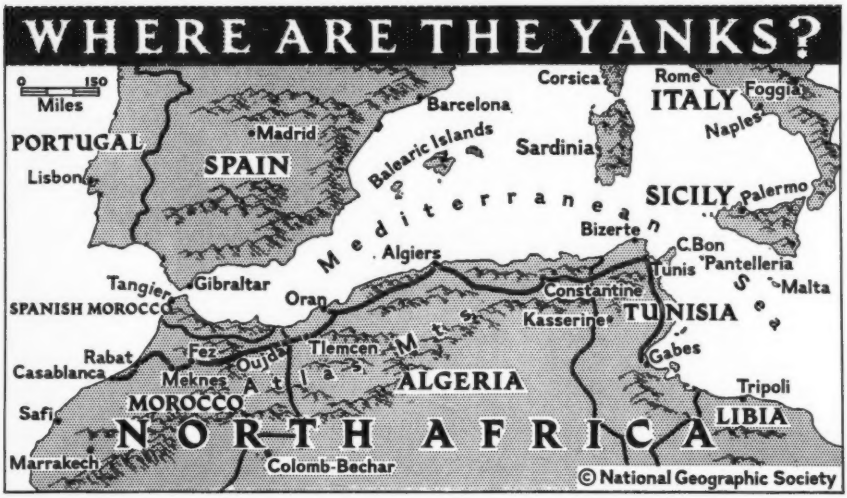
Algiers, headquarters of Uncle Sam's Mediterranean operations, is Algeria's capital and the largest, busiest Barbary port. A crumbling citadel of the corsairs and a hillside native town color the scene. Half the quarter-million people of this North African Marseille are French.

Spared in the fierce fighting for Tunisia's corner a year ago, Tunis demonstrated that American bombing can be precise. The Tunisian capital has a sheltered harbor, connected by channel with the Mediterranean. Northeast of Tunis is the site of ancient Carthage. Roman ruins remind that this region has been repeatedly embattled. Forty miles north of Tunis is the great Bizerte naval base.

Note: Regions of North Africa familiar to American forces are shown on the Society's Map of Africa.

See also, "Americans on the Barbary Coast," in the *National Geographic Magazine* for July, 1943; "Eastward from Gibraltar," January, 1943; and "Time's Footprints on Tunisian Sands," March, 1937*; and these GEOGRAPHIC SCHOOL BULLETINS: "Morocco's Marrakech Has Memories of Empire," February 7, 1944; "Bizerte and Tunis, Military Prizes of North Tunisia," May 3, 1943; and "Whose Side Are the Chotts on?" April 12, 1943.

Bulletin No. 2, March 20, 1944.



YANKS STAGE A RETURN TRIP TO THE BARBARY COAST

Bordered by 2,000 miles of Mediterranean and Atlantic coast, ridged with the chains and spurs of the Atlas Mountains, the North Africa known to the Yanks extends from the Atlantic ports of Morocco to the Marine-hymned shores of Tripoli. Americans fought in this vicinity before in battles with the Barbary corsairs. Only in French Morocco is North Africa's fertile coastal plain more than 150 miles wide. Inland, the continent's well-watered edge dries out into the barrenness of the Sahara. An up-to-date highway system threads through the coastal plain, linking the largest cities: Casablanca, the metropolis of North Africa; Algiers, midway along this French-ruled stretch of coast; and Tunis, in the curve of the northernmost extension of Africa, which lies across the narrows from Sicily and the road that leads to Rome.

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Recent Coal Discoveries Add to Chile's Mineral Wealth

COAL deposits recently found in Chile are important additions to that South American republic's reserves of coal, nitrates, copper, iron, and many other minerals, which are known to be extensive.

The discovery of coal was made on Chiloé, Chile's largest island, just off the southwest coast of South America. Chiloé, with an area of about 4,700 square miles, also produces lumber.

Leads the World in Natural Nitrates

Most of Chile's coal is found in the southern half of the 2,600-mile-long country, south of Concepción. Noted more for its quantity than for its quality, it was useful in pre-Panama Canal days as fuel for ships rounding the Horn or threading the Straits of Magellan.

The new find adds to a known coal reserve of two billion tons. But Chile's plans for industrial expansion are based more on the development of her enormous potential water-power than on use of her coal. She has most of the minerals necessary for extensive industries except tin and oil.

On two others of Chile's minerals—nitrates and copper—depends the present prosperity of the country. Chile has a world monopoly of natural nitrates, and is second only to the United States in copper production. Almost the entire output of these products is exported, largely to the United States. Before the development of synthetic nitrates, used for explosives and fertilizers, Chile's nitrates were foremost on her export list. Today copper has taken first place.

Chile leads the world in output and export of iodine, which is a by-product of the nitrates.

One of the bleakest deserts on earth—the Atacama of north Chile—produces these two gifts of nature—nitrates and copper. Charles Darwin, the naturalist, described the region as a "complete and utter desert" where virtually the only living thing was a "minute lichen growing on the bones of dead mules." In some parts of the Atacama rain has never fallen. In others, rainfall is recorded only once every half-dozen years.

Both Old and New Mining Methods Used

Triple claims by Chile, Peru, and Bolivia on this mineral treasure chest were settled in the War of the Pacific (1879-83), in which Chile defeated the other two countries.

Mining camps are oases in this region. Much of the crude nitrate, or caliche, is mined by the simple old method of placing an explosive under a deposit and blowing it up (illustration, next page) so it can be sorted by hand. At the Chuquicamata copper mine, tapping the largest copper deposit in the world, the latest scientific methods are used.

Of approximately 8,000 copper mines in Chile, three owned by United States interests produce 92 per cent of the copper. Most large-scale nitrate operations are likewise foreign-owned. Before the war the entire output of iron ore went to one company in the United States. Of the six leading commercial products of Chile, three are minerals—copper, nitrates, and iron.

In addition to her purely utilitarian mineral products, Chile possesses precious metals. Gold has been mined in the country since Inca times. The small-scale

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on the job. Rock crushers, trucks, and jeeps by the hundred went to work in the jungle after being transported 16,000 miles to the scene by sea, rail, and road. Work continued day and night, lighted after dark by oil flares.

Workers have been drawn from local tribesmen who accept polyandry, polygamy, and gerontocracy (rule by old men); raise dogs for food, rely on spears for weapons. Some of them have been headhunters, but have nevertheless proved friendly to Americans.

Note: The regions traversed by the new Ledo road may be located on the Society's Map of Asia and Adjacent Areas. See also, "Burma: Where India and China Meet," in the *National Geographic Magazine* for October, 1943; "Burma Road, Back Door to China," November, 1940*; and "Working Teak in the Burma Forests," August, 1930*. (*Issues marked by an asterisk are included in a special list of Magazines available to teachers at 10¢ each in groups of ten.*)

Bulletin No. 3, March 20, 1944.

Joseph F. Rock

LONG-ROOTED TREES AND LONG-HAIRED TRIBESMEN HAUNT BURMA'S JUNGLES

Road builders have cut through jungles of tall ferns, tangled saplings, and occasional solitary forest giants like this specimen of the ficus family, festooned with aerial roots. One of the forest rarities is the chaulmoogra tree, source of the oil with which leprosy is treated. Among the hill people of the jungle are the Mishmi, whose men affect a ladylike long-haired pompadour. Dangling earrings heighten the illusion of effeminacy, which is flatly contradicted by the long, murderous, machete-type knife carried in a sling over the shoulder.

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Geo-Graphic Brevities

PSKOV AGAIN SYMBOL OF RUSSIA'S WILL FOR FREEDOM

GOVERNMENT by and for the people is a tradition at Pskov. This Russian rail center on the line of Soviet advance south from Leningrad to the borders of Latvia and southern Estonia was a stronghold of democracy in Europe in the Middle Ages. It witnessed the overthrow of Russia's Tsars in 1917.

One of Russia's oldest cities, Pskov has stood through changing fortunes for at least a thousand years. Nine navigable miles up the Velikaya River from the Pskov Lake arm of Lake Peipus, Pskov grew to importance as a station for overland trade travel between the Black Sea and the Baltic.

Russians, Germans, and Lithuanians squabbled over Pskov in the 11th and 12th centuries. By 1300 it was a flourishing city-state supervised by neighboring Novgorod. In 1348 it was made free and equal to Novgorod by treaty. Both cities were members of the Hanseatic League, renowned as strongholds of the free ballot and free speech.

Pskov grew more democratic as Novgorod drifted into the despotism of its own wealthy merchants. Pskov held out longer against the growing power of Moscow's princes. It yielded in 1510—35 years after Novgorod. The last remnants of self-government were not erased until nearly 1700.

Revolution against Tsarist rule shook Pskov as early as 1905. On March 13, 1917, Nicholas II, who had long been evading the demands of his people for a constitutional government, entrained at Mogilev, his army headquarters, to join the Tsarina at the Imperial Palace near Leningrad (then Petrograd). Army revolters seized his private railroad car and shunted it to Pskov. There, on March 15, Nicholas signed his abdication.

On February 23, 1918, Pskov became a center of the revolution that brought the Lenin-Stalin forces into power and paved the way for the Soviet Union.

Nazi-occupied for two and a half years, Pskov's importance as a communications hub is at once apparent on railroad maps. No less than six rail-line spokes radiate from the city—four to the Baltic Sea ports of Riga, Tallinn, Narva, and Leningrad; one southwest to Dvinsk (Daugavpils) and Warsaw (Warszawa); and one that runs east to and across the Leningrad-Moscow line. Pskov's prewar population was about 50,000.

Note: Pskov may be located on the Society's Map of Europe and the Near East.

For additional information, see "I Learn about the Russians," in the *National Geographic Magazine* for November, 1943; "'Magnetic City,' Core of Valiant Russia's Industrial Might," May, 1943; and "Mother Volga Defends Her Own," July, 1942*.

See also the following GEOGRAPHIC SCHOOL BULLETINS: "Strange Place Names Flare on Russia's Battlefront," February 7, 1944; "Russian Victories Reclaim Industrial Cities," November 15, 1943; "Vitebsk a Russian Railway Junction" (Geo-Graphic Brevity), January 17, 1944; and "Pripet Marshes a Mid-Europe Bog" (Geo-Graphic Brevity), January 10, 1944.

* * * * *

ASIA'S WATER BUFFALO AIDS U. S. ARMY AIR FORCES

AMERICAN sky fighters in the China-Burma-India theater of war have a new ally. It is the huge and powerful swamp-wallower—Asia's beast of burden—the water buffalo.

This plow horse of the rice paddies and pack horse for the rice eaters now

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placer gold mining done today puts Chile in fifth place in gold mining among American nations. Silver is mined around Copiapó. The refuse from the original crude refining was used for making bricks. When science developed more efficient processes, it was found that this refuse contained 60 ounces of silver per ton. Houses which had been made of these local bricks were torn down for the silver in their walls.

Manganese, important as an alloy of steel, comes from Chile in greater quantities than from any other American country except Brazil and Cuba. Sulphur is produced and used locally in Chile; exports are growing.

Rounding out the list of Chile's mineral products are such useful materials as asbestos, the fibrous fireproof mineral; kaolin, a pure white clay formed of a silicate of aluminum, used in fine porcelain; apatite (calcium phosphate-fluoride); and borates, potash, talc, cobalt, zinc, molybdenum, and tungsten.

Note: Regions where Chile's mineral wealth is found may be located on the Society's Map of South America.

For additional information on Chile, see "Chile's Land of Fire and Water," in the *National Geographic Magazine* for July, 1941*; "Inside Cape Horn," December, 1937; and "Twin Stars of Chile," February, 1929. See also the following GEOGRAPHIC SCHOOL BULLETINS: "Chile, Enriched by Sea Frontage, to Harness River Power," November 29, 1943; and "Ribbon-Shaped Chile, the Two-in-One Republic," December 14, 1942.

Bulletin No. 4, March 20, 1944.

Frank Ehrenford

HIGH EXPLOSIVES HIGH IN CHILE HELP FARMERS AND FIGHTERS FAR AWAY

With a spark from the overhead wire, this above-ground miner in Chile's Tarapacá Province sets off an explosion that will have both constructive and destructive results. The explosion frees crude nitrate from Chile's valuable surface deposits. The nitrate will be refined in a near-by mill and exported from Chile's Pacific ports to serve, constructively, as fertilizer on farms, and, destructively, in explosives on battlefronts. Chile's nitrate deposits extend for 300 miles, about equally divided between Tarapacá, the country's northernmost Province, and neighboring Antofagasta to the south, and are at altitudes ranging from 4,000 to 9,000 feet. For 60 years Chile has been leading the world in export of natural nitrates.

contributes to the Air Forces its prized decoration and chief weapon—its horns. They are used in bombers and fighter planes, but not as good-luck charms. Properly cut and shaped, they are an excellent substitute material for making the insulator sleeves used in aircraft electrical connect-and-disconnect plugs. These sleeves are essential in keeping plane generators operating. The buffalo horn pinch-hits for the insulating material ordinarily used in the sleeves.

The horn is long and comparatively flat, tapering gradually from root to tip. The bulls' horns, being thicker, are more satisfactory than those of the cows.

The water buffalo is found in many regions of the world, but only in India does it exist in a truly wild state. It wanders through the swamps and jungles at the foot of the Himalayas, in the Ganges Delta, in the Central Provinces, and to some extent in the jungles of western Assam. Domesticated, it has proved to be a valuable worker in Italy, Turkey, in the fertile valley of the Nile, and in the marshlands of Hungary and the Crimea. It is practically indispensable in flooded rice fields of the Orient where horses and mules are seldom used for agricultural purposes.

Millions of buffalos are kept in India for their milk or killed for their meat. Although slightly bluish, the milk is very rich, and high in butterfat.

This ponderous, plodding animal, often so docile that it can be led around by the nose or ridden by a small child (illustration, below), can be aroused and become dangerous on scenting a white man.

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Maynard Owen Williams

A CHILD CAN HANDLE THE BUFFALO THAT CAN DESTROY A MAN

The water buffalo, which may run amuck on occasion and kill anyone within reach, can also be a mild and useful domestic animal—as demonstrated by this peaceful scene in Indochina. Under the feathery bamboo trees that fringe the misty Huonggiang (River of Perfume) near Hué, the small barefoot cowboy herds his cattle home, riding on a lumbering water buffalo. The other half of the herd, led by a chain through the nose, plods along behind. These huge animals of the ox family are well adapted for their work in wet country and in flooded rice fields throughout southeast Asia. Their broad spreading hoofs keep them from sinking deep in the mud, and their taste for coarse aquatic plants rather than for dry vegetation is conveniently satisfied right at home. By comparison with the traditional ten-gallon hats of America's cowboys, this Asian youngster's shaggy-edged sunshade might be figured a half-pint hat.

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